



UNITED STATES PATENT AND TRADEMARK OFFICE

cen

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/686,772	10/17/2003	Toyohiko Mitsuzawa	Q77942	7752
23373	7590	07/05/2007	EXAMINER	
SUGHRUE MION, PLLC			FIDLER, SHELBY LEE	
2100 PENNSYLVANIA AVENUE, N.W.				
SUITE 800			ART UNIT	PAPER NUMBER
WASHINGTON, DC 20037			2861	
			MAIL DATE	DELIVERY MODE
			07/05/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/686,772	MITSUZAWA, TOYOHIKO	
	Examiner Shelby Fidler	Art Unit 2861	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 16 April 2007.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) 6 and 14 is/are allowed.
- 6) Claim(s) 1-5,7-13,15-16 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date: _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date: _____ | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 4/16/2007 has been entered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3, 5, 8-9, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Izumi et al. (US 6568784 B2) in view of Okawa et al. (US 6561615 B2).

Regarding claim 1:

Izumi et al. disclose a printing apparatus comprising:

a plurality of print heads (inkjet heads 30);

a moving member (carriage 17) that can be moved along a main-scanning direction (col. 5, lines 28-34) and that is provided with the plurality of print heads (col. 5, lines 15-19 and Fig. 2A);

a feed mechanism (conveying roller 5) for feeding a medium (roll sheet 2) to be printed (col. 4, lines 52-57); and

a drive member (timing belt) that is connected to the moving member (17) at a connecting section (the section wherein the timing belt and the pulleys connect; Fig. 2A) and that is for driving the moving member along the main-scanning direction (col. 6, lines 24-32); wherein dots (horizontal lines) for correcting a feed amount by which the feed mechanism feeds the medium to be printed (col. 7, lines 54-58 and col. 8, lines 8-12) are formed on the medium to be printed by ejecting ink from a predetermined print head (inkjet head 30K; col. 7, lines 65-67 and col. 9, lines 25-59; since a low level output is obtained by reading a black mark, inkjet head 30K must be used to print the patterns), among the plurality of print heads, while moving the moving member (col. 8, lines 1-4), and

wherein the predetermined print head (30K) is a print head other than the print head that is the furthest away from the connection section in a direction perpendicular to the main-scanning direction (e.g. inkjet head 30Y), among the plurality of print heads (Fig. 2A).

Izumi et al. do not expressly disclose that the drive member is connected to the moving member at a connecting section, or that the predetermined print head is a print head other than the print head that is furthest away from the connecting section in a direction perpendicular to the main-scanning direction, among the plurality of print heads.

However, Okawa et al. disclose a drive member (timing belt 130) that is connected to a moving member (carriage 17) at a connecting section (the section where the timing belt 130 and the pulleys connect shown in Figs. 2A and 3), and that the black print head (30K) is not the print head that is furthest away from the connecting section in a direction perpendicular to a main-scanning direction, among a plurality of print heads (since the timing belt 130 connects to the

Art Unit: 2861

pulleys at both the top and bottom of the carriage, each head 30, with the exception of inkjet head 30Y, meets this limitation).

Therefore, at the time of invention, it would have been obvious to a person of ordinary skill in the art to utilize the connecting section (only shown in the Figures of Izumi et al.) of Okawa et al., into the invention of Izumi et al. The motivation for doing so, as taught by Okawa et al., is to move the carriage (col. 7, lines 48-57).

Regarding claim 2:

Okawa et al. also disclose that the predetermined print head (30K) is the print head, among the plurality of print heads (30), that is the least susceptible to the vibration caused by moving the moving member (Figs. 2A and 3C show that inkjet head 30K is closest to both the guide bars 33 and the connecting section).

Examiner also notes that this limitation does not present any structure to the claimed apparatus, and thus provides no patentable weight to the claimed apparatus.

Regarding claim 3:

Okawa et al. also disclose that the predetermined print head (30K) is the print head that is located the closest to a connecting section at which the moving member (17) and the drive member (timing belt) are connected to each other (Figs. 2A and 3C).

Regarding claim 5:

Izumi et al. also disclose that the dots for correcting the feed amount by which the feed mechanism feeds the medium to be printed are formed on the medium to be printed by ejecting ink from predetermined nozzles provided in the predetermined print head (col. 8, lines 12-14).

Regarding claim 8:

Izumi et al. also disclose that the dots for correcting the feed amount by which the feed mechanism (5) feeds the medium to be printed are formed on the medium to be printed when power is supplied to the printing apparatus (obvious to the invention of Izumi et al. since power is needed to perform the operations of col. 8, lines 15-37).

Regarding claim 9:

Izumi et al. also disclose that the dots for correcting the feed amount by which the feed mechanism feeds the medium to be printed are formed on the medium to be printed during a printing operation of the printing apparatus (col. 8, lines 15-37).

Regarding claim 13:

Izumi et al. also disclose that at least two correction amounts for correcting the feed amount by which the feed mechanism feeds the medium to be printed are obtained based on the dots formed on the medium to be printed (col. 10, lines 8-25), and wherein, based on an average value of the correction amounts that are obtained, the feed amount by which the feed mechanism feeds the medium to be printed is corrected (col. 10, lines 26-44).

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Izumi et al. (US 6568784 B2) as modified by Okawa et al. (US 6561615 B2), as applied to claim 3 above, and further in view of Yoshimura et al. (US 6439684 B1).

Regarding claim 4:

Izumi et al. as modified by Okawa et al. disclose all the limitations of claim 3, and Izumi et al. also disclose that the dots for correcting the feed amount by which the feed mechanism feeds the medium to be printed are formed on the medium to be printed by ejecting

ink from the predetermined print head, among the plurality of print heads, while moving the moving member (col. 8, lines 15-26 and Fig. 4).

Izumi et al. as modified by Okawa et al. do not expressly disclose that the dots are printed on edge sections of the medium.

However, Yoshimura et al. disclose dots (line patterns P and Pa) for correcting the feed amount by which a feed mechanism feeds the medium (col. 6, lines 33-35) are printed on edge sections of the medium (Fig. 3).

At the time of invention, it would have been obvious to a person of ordinary skill in the art to utilize the test pattern of Yoshimura et al. into the invention of Izumi et al. as modified by Okawa et al. The motivation for doing so, as taught by Yoshimura et al., is to adjust and control the feeding amount of a recording sheet (col. 6, lines 33-35).

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Izumi et al. (US 6568784 B2) as modified by Okawa et al. (US 6561615 B2), as applied to claim 1 above, and further in view of Takemura et al. (US 5988784).

Regarding claim 7:

Izumi et al. as modified by Okawa et al. disclose all claimed limitations except that a decision of whether or not to form the dots for correcting the feed amount is made according to a value of a temperature around the printing apparatus.

However, Takemura et al. disclose that a decision of whether or not to form the dots for correcting the feed amount is made according to a value of a temperature around the printing apparatus (col. 15, lines 25-37).

At the time of invention, it would have been obvious to a person of ordinary skill in the art to utilize a decision of whether or not to print dots for correcting a sheet feed amount according to the temperature around the printing apparatus into the invention of Izumi et al. as modified by Okawa et al. The motivation for doing so, as taught by Takemura et al., is that a change in speed of conveyance occurs with a change in environmental conditions (col. 17, lines 1-13).

Claims 10-12, 15, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Izumi et al. (US 6568784 B2) as modified by Okawa et al. (US 6561615 B2), as applied to claim 1 above, and further in view of Kojima (US 6905186 B2).

Regarding claim 10:

Izumi et al. as modified by Okawa et al. disclose all claimed limitations except that the dots for correcting the feed amount by which the feed mechanism feeds the medium to be printed are formed on the medium to be printed when the medium to be printed has been exchanged.

However, Kojima discloses that the dots for correcting the feed amount by which the feed mechanism feeds the medium to be printed are formed on the medium to be printed when the medium to be printed has been exchanged (col. 10, lines 7-13).

At the time of invention, it would have been obvious to a person of ordinary skill in the art to form dots for correcting the feed amount when the medium has been exchanged in the invention of Izumi et al. as modified by Okawa et al. The motivation for doing so, as taught by Kojima, is that the feeding distance or feeding speed deviates when the paper changes because the friction between the paper and the rollers change (col. 1, lines 39-49).

Regarding claim 11:

Kojima also disclose a detector (obvious to col. 10, lines 7-9) for detecting whether or not the medium to be printed has been exchanged (col. 10, lines 7-9);

wherein, when it has been detected by the second detector that the medium to be printed has been exchanged, the dots for correcting the feed amount by which the feed mechanism feeds the medium to be printed are formed on the medium to be printed (col. 10, lines 9-13).

Regarding claim 12:

Izumi et al. as modified by Okawa et al. disclose all claimed limitations except that the dots for correcting the feed amount by which the feed mechanism feeds the medium to be printed are formed on the medium to be printed when a print mode of the printing apparatus has been changed.

However, Kojima discloses that the dots for correcting the feed amount by which the feed mechanism feeds the medium to be printed are formed on the medium to be printed when a print mode of the printing apparatus has been changed (col. 4, lines 45-46, 52-53 and Fig. 4).

At the time of invention, it would have been obvious to a person of ordinary skill in the art to form dots for correcting the feed amount when the print mode has been changed in the invention of Izumi et al. as modified by Okawa et al. The motivation for doing so, as taught by Kojima, is to record test patterns to detect a feeding imperfection (col. 4, lines 52-53, 58-61).

Regarding claim 15:

Izumi et al. as modified by Okawa et al. disclose all claimed limitations except a detector for detecting whether or not the medium to be printed has been exchanged;

Art Unit: 2861

wherein when it has been detected by the detector that the medium to be printed has been exchanged, the dots for correcting the feed amount by which the feed mechanism feeds the medium to be printed are formed on the medium to be printed.

However, Kojima disclose a detector (obvious to col. 10, lines 7-9) for detecting whether or not the medium to be printed has been exchanged (col. 10, lines 7-9);

wherein when it has been detected by the detector that the medium to be printed has been exchanged, the dots for correcting the feed amount by which the feed mechanism feeds the medium to be printed are formed on the medium to be printed (col. 10, lines 9-13).

At the time of invention, it would have been obvious to a person of ordinary skill in the art to form dots for correcting the feed amount when the medium has been exchanged in the invention of Izumi et al. as modified by Okawa et al. The motivation for doing so, as taught by Kojima, is that the feeding distance or feeding speed deviates when the paper changes because the friction between the paper and the rollers change (col. 1, lines 39-49).

Regarding claim 16:

Izumi et al. as modified by Okawa et al. disclose all claimed limitations except that each of the plurality of print heads has a block nozzle row, a cyan nozzle row, a magenta nozzle row, and a yellow nozzle row.

However, Kojima discloses print heads (inkjet head 15) having a block nozzle row (24), a cyan nozzle row (23), a magenta nozzle row (22), and a yellow nozzle row (21).

At the time of invention, it would have been obvious to a person of ordinary skill in the art to utilize the printhead construction of Kojima into the invention of Izumi et al. as modified by Okawa et al. The motivation for doing so, as taught by Kojima, is so that a full color image of one line may be printed along the main scan direction (col. 3, lines 43-45).

Allowable Subject Matter

Claims 6 and 14 are allowed.

Please see Office Action dated 11/16/2006 concerning reasons for allowance.

Response to Arguments

Applicant's arguments with respect to claim 1 have been considered but are moot in view of the new ground(s) of rejection. Please see the above obviousness-type rejection based on the disclosures provided by Izumi et al. and Okawa et al. This combination discloses a printing apparatus comprising a drive member that is for driving the moving member along the main-scanning direction, and a predetermined printhead that is furthest away from a connecting section in a direction perpendicular to the main-scanning direction.

Examiner notes Applicant's argument that Izumi et al. does not disclose a drive member that is for driving the moving member along the main-scanning direction. However, as shown in the previous Office Action, Izumi et al. disclose a drive means 36 for reciprocating the carriage 17 (col. 6, lines 24-26), and that the drive means comprises a pair of pulleys and a timing belt (col. 6, lines 27-32). Therefore, Izumi et al. properly discloses this claimed limitation.

Communication with the USPTO

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shelby Fidler whose telephone number is (571) 272-8455. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Luu can be reached on (571) 272-7663. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Shelby Z. Fidler 6/26/2007

Shelby Fidler
Patent Examiner
AU 2861



MATTHEW LUU
SUPERVISORY PATENT EXAMINER